Claims

[c1]   What is claimed is:

1.An optical proximity correction (OPC) method for correcting a photomask layout, the photomask layout comprising at least a first photomask pattern including a first straight line having a first line-end arranged in a first direction and a second straight line arranged in parallel with the first straight line, the second straight line having a second line-end being longer and more protrudent than the first line-end, the OPC method comprising: performing a rule-based OPC process to generate a corrected photomask layout; and adding an enhancing feature in the first line-end, a width of the enhancing feature being smaller than a width of the first straight line, and the second line-end being still more protrudent than the first line-end with the enhancing feature.

[c2]   2.The OPC method of claim 1, wherein the photomask layout further comprises a second photomask pattern, the second line-end being closer to the second photomask pattern than the first line-end.

[c3]   3.The OPC method of claim 2, wherein the second line-

end reaches to the first photomask pattern.

[c4]   4.The OPC method of claim 2, wherein a distance is present between the first line-end and the second pho- tomask pattern, and adding the enhancing feature is performed by shortening the distance to 1/2 to 2/3 times of the distance.

[c5]   5.The OPC method of claim 2, wherein the second pho- tomask pattern is a straight line.

[c6]   6.The OPC method of claim 5, wherein the second pho- tomask pattern is arranged in a second direction.

[c7]   7.The OPC method of claim 6, wherein the first direction is perpendicular to the second direction.

[c8]   8.The OPC method of claim 1, wherein the enhancing feature is a rectangle pattern.

[c9]   9.The OPC method of claim 1, wherein the rule-based OPC process comprises:
collecting a width, a length, and a spacing of each of the photomask patterns of the photomask layout to obtain a group of parameters of the photomask layout;
computing a target bias of the photomask layout by us- ing a correction rule of a database according to the group of parameters; and

adding an assist feature in the photomask layout according to the target bias.

[c10] 10. The OPC method of claim 9, wherein the assist feature is a serif or a hammerhead pattern.

[c11] 11. An OPC method for correcting a photomask layout, the photomask layout comprising:

a first photomask pattern including a first straight line, a second straight line, and a third straight line arranged in parallel with each other and in a first direction; and

a second photomask pattern;

wherein the first, the second, and the third straight lines respectively have a first line-end, a second line-end, and a third line-end closer to the second photomask pattern, wherein the second line-end is more protrudent than the first line-end and the third line-end and reaches to the second photomask pattern, a first distance is present between the first line-end and the second photomask pattern, and a second distance is present between the third line-end and the second photomask pattern, the OPC method comprising:

performing a rule-based OPC process to generate a corrected photomask layout; and

adding a first enhancing feature and a second enhancing feature in the first line-end and the third line-end of the corrected photomask layout respectively, a width of the

first enhancing feature and a width of the second enhancing feature being smaller than a width of each of the first straight line and a width the third straight line respectively, and both the first distance and the second distance being shortened.

[c12]   12.The OPC method of claim 11, wherein adding the first enhancing feature is performed by shortening the first distance to 1/2 to 2/3 times of the first distance.

[c13]   13.The OPC method of claim 11, wherein adding the second enhancing feature is performed by shortening the second distance to 1/2 to 2/3 times of the second distance.

[c14]   14.The OPC method of claim 11, wherein the first and the second enhancing feature are rectangle patterns.

[c15]   15.The OPC method of claim 11, wherein the second photomask pattern is a straight line.

[c16]   16.The OPC method of claim 15, wherein the second photomask pattern is arranged in a second direction.

[c17]   17.The OPC method of claim 16, wherein the first direction is perpendicular to the second direction.

[c18]   18.The OPC method of claim 11, wherein the rule-based OPC process comprises:

collecting a width, a length, and a spacing of each of the photomask patterns of the photomask layout to obtain a group of parameters of the photomask layout;

computing a target bias of the photomask layout by using a correction rule of a database according to the group of parameters; and

adding an assist feature in the photomask layout according to the target bias.

[c19] 19.The OPC method of claim 18, wherein the assist feature is a serif or a hammerhead pattern.